

Conference News

THE 1987 EASTERN SIMULATION CONFERENCES

The 1987 ESC's, held in Orlando Florida April 6–9, 1987 consisted of four separate conferences. These were:

- Simulators IV
- The Simulation Profession
- Tools for the Simulationist
- Methodology and Validation.

Simulators IV was the largest of these conferences. This conference concentrated specifically on simulators, and was divided into the following areas: Artificial Intelligence, Applications, Biomedical, Modeling, Census of Real-Time Simulation Training Devices, Visuals, Design and Manufacturing, Maintenance, Technologies, and Organizational Behavior.

Among the papers included in the proceedings from this conference was "SIMSMART-Dynamic simulation for automated control of complex industrial processes, by Don Waye. In this paper Waye introduces the idea of Synthetic Intelligence (SI) defined as the synthesis of proven knowledge-based engineering technologies. SI has been used for expert system development with: 1. languages other than AI languages, 2. data structures similar to those employed by AI languages; and 3. proven traditional engineering technology.

Simulator sickness, a special case of motion sickness that one can experience upon exposure to flight simulators, is discussed in two papers. Kevin Uliano and Robert Kennedy discuss some physiological and paper-and-pencil criteria measures along with a proposed avenue of research.

"Simulation of Product Quality and Process Performance" by Gary L. Jones discusses concepts of modeling and simulation of performance attributes in the conventional simulation environment. New ideas of relating information in the simulator with the qualitative information in the expert system are explored. Simulation of a mechanical pulping process for papermaking using the MAPPS simulator is described for illustration.

L. C. Keskey and David J. Sykes, in "An Artificial Intelligence (AI) – Simulation Based Approach for Aircraft maintenance training" describe a synergistic combination of a qualitative simulation model and an Expert System that provides a powerful tool which can serve both as an instructional device and a job performance aid. The motivation for this work is the challenge of maintaining increasingly complex systems with diminishing personnel resources. While Expert Systems show great promise as aids during troubleshooting, they do little to improve the level of understanding of internal functioning of the equipment being maintained. The best expert troubleshooters possess a mental model of how the equipment works and understand the impact of malfunctions. A qualitative simulation model with a high resolution graphics interface is a powerful tool for developing mental models in the minds of maintenance technicians. By combining qualitative simulation with an Expert System, a tool that can perform the dual role of instructor and troubleshooting aid is created. This approach will significantly alter the way maintenance is performed and the way maintenance technicians are trained.

SIMULATORS IV is available from The Society for Computer Simulation, P. O. Box 17900, San Diego, CA, USA for \$36.00.

Papers from The Simulation Profession, and from Tools for the Simulationist are combined into one volume, TOOLS FOR THE SIMULATION PROFESSION, priced at \$24.00. Applications papers about models built in several different simulation languages are described.

One of the most interesting presentations incorporated into this volume is by A. Ben Clymer, "Aspects of a Consulting Practice in Simulation and Simulators." The paper deals with some of the problems involved in a consulting practice in the field. Discussion includes legal problems, the challenges of marketing and selling consulting services, the patterns of work flow, the achievement and maintenance of expertise, finances, management of a practice, the psychological aspects, and the rewards.

METHODOLOGY AND VALIDATION, available for \$36.00 includes sections on The State of the Art, Credibility Assessment of Simulation Results, Distributed Simulation, Model Development, Simulation and Artificial Intelligence, Statistical Analysis of Output Data, and applications papers.

In this volume, a paper by Brian Wyvill and Bruce MacDonald describes, as its name implies, the "State of the Art in Computer Graphics and Animation." It touches on graphical simulation of robots, but concentrates on the entire area of graphical animation.

"Credibility Assessment of Simulation Results: The State of the Art" by Osman Balci, also Chairman of the conference, and Editor of the book, contains a glossary and set of references that will be an important reference for future work in this area.

The 1988 Eastern Simulation Conferences will also be held in Orlando, Florida, April 18–21. The individual conferences will be: Simulators V, The Simulation Profession, Tools for the Simulationist, Credibility Assessment, and Simulation Languages.

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INTERNATIONAL WORKSHOP ON MODELLING TECHNIQUES AND PERFORMANCE EVALUATION

(Paris, 9–11 March 1987)

This conference was held on March 9–11, 1987, in Paris, the third one sponsored by AFCET in this area, and was organized through the AFCET working group on Performance Evaluation; previous workshops were in Paris (83) and Sophia-Antipolis (85). The workshop has also been organized with the sponsorship of the MASI Lab, ENST, IFIP WG7.3, INRIA, CNET, SEE, BULL, IBM, ALCATEL and THOMSON, and with the support of the French Ministry of Research and Higher Education. The chairman of the conference was Guy Pujolle (MASI Lab – Université Paris 6 – France); program committee chairmen responsible for Europe, USA and Asia were respectively Serge FDIDA (MASI Lab – Université Paris 6 – France), Harry PERROS (North Carolina State University – USA) and Y. Takahashi (Kyoto University – Japan).

The program committee proposed that this workshop be focussed mainly on modelling and measurement techniques and packages, as well as on the use of artificial intelligence tools. People from different fields met and exchanged views on the advances and contributions that have been made in the performance evaluation area, as well as on future trends for both researchers and users.

The conference was divided in 9 sessions covering modelling techniques, applications and tools.

Several modelling techniques, such as decomposition, matrix-geometrix, aggregation and operational analysis were presented in a general way or in order to provide the analysis of specific problems (queueing networks with blocking) or applications in the field of computer and communication system. Statistical methods were also discussed. Some results and algorithms were presented for product form closed queueing networks, focusing on multi-class bottleneck analysis. The use of approximations in production performance evaluation software was discussed and problems outlined. Since an increasing number of systems include synchronisation mechanisms (queueing models do not easily handle those behaviours) several contributions were discussed in order to capture those kinds of mechanisms starting from queueing networks or Petri nets concepts; this was emphasized by a comparison of performance Petri nets and queueing network models which was first presented and analysed. The area of workload characterization emerged as a topic widely studied, and many papers investigated the way to extract workload characterization in the fields of computer network protocols, relational DBMS and fourth generation languages as well.

Queueing network technology has become widely used in computer system performance evaluation in order to provide powerful and reliable tools. Mainly, two of the most active computer systems areas were investigated in order to analyze their performance. Aspects of performance evaluation in supercomputers and scientific applications, as well as revue of performance of loosely coupled array of processors were discussed. The field of Local Area Networks (LANs) was also well covered through several presentations discussing protocols and benchmarking.

Performance evaluation tools and packages based on queueing networks or Petri nets techniques were also presented during the workshop. The use of expert systems in the performance evaluation area was introduced and several approaches were discussed. It appears that the use of *AI* tools for the production of performance evaluation software will develop substantially during the coming years.

This workshop brought together 100 people from 12 countries. The interaction among participants was extremely good and, thus, the workshop was found to be strongly informative. Furthermore, the workshop definitely investigated new kinds of topics.

Copies of the complete conference proceedings may be ordered from AFCET, 156, Bld Pereire, 75017 Paris – France

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